

# MONTHLY WEATHER REVIEW.

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No. 3.

## INTRODUCTION.

This REVIEW contains a general summary of the meteorological conditions which prevailed over the United States during March, 1884, based upon the reports from the regular and voluntary observers of the Signal Service, and from co-operating state weather services.

Descriptions of the storms which occurred over the north Atlantic ocean during the month are also given, and their approximate paths shown on chart ii.

The following may be mentioned as the most noteworthy features of the month:

1. The continuation of the flood which began in the lower Mississippi river during February. At New Orleans, Louisiana, the river reached a height exceeding by one inch the high stages of 1874 and 1883. Damaging freshets also occurred in the smaller rivers in many states, those occurring in California being especially destructive.

2. The destructive tornadoes and hail storms which occurred in the Southern states on the 25th, during the passage of low area xi.

The month was slightly warmer than the average in the states bordering on the Atlantic south of New England, in the Ohio valley, Tennessee, and the Gulf states. In other sections of the country the mean temperatures were below the normal.

The precipitation of the month was largely in excess of the average in California, Tennessee, and the east Gulf states, while marked deficiencies occurred in the north Pacific coast region, Florida peninsula, and the Rio Grande valley.

In the preparation of this REVIEW the following data, received up to April 20th, 1884, have been used, viz.: the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and twenty-two Signal Service stations and fourteen Canadian stations, as telegraphed to this office; one hundred and sixty-one monthly journals, and one hundred and forty-seven monthly means from the former, and fourteen monthly means from the latter; two hundred and seventy-two monthly registers from voluntary observers; forty-eight monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports, through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs, furnished by the publishers of "The New York Maritime Register;" monthly weather reports from the local weather services of Alabama, Illinois, Indiana, Iowa, Kansas, Nebraska, Ohio, and Tennessee, and of the Central Pacific railway company; trustworthy newspaper extracts; and special reports.

## ATMOSPHERIC PRESSURE.

[Expressed in inches and hundredths.]

The distribution of mean atmospheric pressure for March,

1884, determined from the tri-daily telegraphic observations of the Signal Service, is shown by the isobarometric lines on chart iii. This chart shows the mean pressure for the month to have been greatest over northeastern Montana, the upper Missouri valley, and in South Carolina, Georgia and Florida, where barometric means of 30.1 occurred. The regions of least mean pressure comprised the north Pacific coast region and Canadian maritime provinces, where the mean pressure was below 29.95, the lowest mean, 29.91, being reported from Fort Canby, Washington Territory and Sidney, Nova Scotia.

The mean pressure for March, compared with that for the preceding month, shows that a decrease has occurred in all parts of the country, except over a small area in the lake region, where there was no change. The greatest decrease occurred in the upper Missouri valley, Idaho and the Canadian maritime provinces, where it varied from .15 to .17. A decrease ranging from .10 to .15 occurred over the eastern slope of the Rocky mountains, on the north Pacific coast and in New England. In the remaining districts, the deficiencies varied from .01 to .10.

## DEPARTURES FROM THE NORMAL VALUES FOR THE MONTH.

The mean pressure for March, compared with the normal for the corresponding month, shows deficiencies in the eastern Gulf states and in all districts west of the Mississippi river. The most marked departures occurred over an area extending from Colorado and Utah northwestward to the Pacific coast, where they varied from .11 to .17. In the lake region, Ohio valley, and in the districts on the Atlantic coast, the mean pressure was above the normal, the departures varying from .01 to .11, being greatest in New England.

## BAROMETRIC RANGES.

The barometric ranges over the entire country varied from .34 at Key West, Florida, to 1.42 at Marquette, Michigan. The monthly ranges exceeded 1.25 over an area extending from southern Dakota and eastern Nebraska northeastward to Lake Superior. They were less than .50 in southern Florida, and in the southern parts of Arizona, California, and New Mexico.

In the several districts the monthly barometric ranges have varied as follows:

*New England.*—From .91 at New Haven, Connecticut, to 1.02 at Provincetown, Massachusetts, and 1.07 on the summit of Mount Washington, New Hampshire.

*Middle Atlantic states.*—From .86 at Lynchburg, Virginia, to .99 at Delaware Breakwater, Delaware.

*South Atlantic states.*—From .80 at Jacksonville, Florida, to .88 at Fort Macon, North Carolina.

*Florida peninsula.*—From .34 at Key West, to .50 at Sanford.

*Eastern Gulf states.*—From .56 at New Orleans, Louisiana, to .68 at Montgomery, Alabama.

*Western Gulf states.*—From .61 at Galveston, Texas, to .90 at Fort Smith, Arkansas.

*Rio Grande valley.*—From .61 at Brownsville, Texas, to .67 at Rio Grande City, Texas.

*Ohio valley and Tennessee.*—From .80 at Chattanooga, Knoxville, and Memphis, Tennessee, to .98 at Indianapolis, Indiana, and Louisville, Kentucky.

*Lower lake region.*—From .90 at Oswego, New York, to 1.08 at Detroit, Michigan.

*Upper lake region.*—From 1.07 at Port Huron, Michigan, to 1.42 at Marquette, Michigan.

*Extreme northwest.*—From 1.07 at Bismarek, Dakota, to 1.10 at Saint Vincent, Minnesota.

*Upper Mississippi valley.*—From .91 at Cairo, Illinois, to 1.36 at Saint Paul, Minnesota.

*Missouri valley.*—From 1.17 at Fort Bennett, Dakota, to 1.36 at Yankton, Dakota.

*Northern slope.*—From .69 at Fort Shaw, Montana, to 1.16 at North Platte, Nebraska.

*Middle slope.*—From .62 on the summit of Pike's Peak, Colorado, and .92 at Fort Elliott, Texas, to 1.20 at Dodge City, Kansas.

*Southern slope.*—From .56 at Fort Stockton, Texas, to .81 at Fort Concho, Texas.

*Southern plateau.*—From .36 at Fort Grant, Arizona, to .50 at Fort Thomas, Arizona.

*Middle plateau.*—88 at Salt Lake City, Utah.

*Northern plateau.*—From .94 at Dayton, Washington Territory, to 1.04 at Lewiston, Idaho.

*North Pacific coast region.*—From .91 at Fort Canby, Washington Territory, to .96 at Roseburg, Oregon.

*Middle Pacific coast region.*—From .76 at San Francisco, California, to .96 at Red Bluff, California.

*South Pacific coast region.*—From .37 at Los Angeles, California, to .50 at Yuma, Arizona.

#### AREAS OF HIGH BAROMETER.

I.—The morning report of the 1st showed a rise of .40 of an inch in the barometer over Manitoba; during the day the rise extended over the upper Mississippi valley, and on the 2d over the south Atlantic and east Gulf states. The temperature fell from 10° to 20° in the upper Mississippi and Missouri valleys on the 1st; from 6° to 9° in Tennessee and the east Gulf states on the morning of the 2d; and from 7° to 10° in the south Atlantic states during the day.

II.—This high area first appeared in Manitoba, and at midnight of the 2d the rise extended into the upper Mississippi and Missouri valleys. The temperature had fallen 29° at Fort Garry, 30° at Saint Vincent, Minnesota, and 40° at Bismarek, Dakota. The area of highest pressure was over Iowa and Missouri at midnight of the 3d, over the middle Atlantic coast at midnight of the 4th, and over Nova Scotia at midnight of the 5th. The cold wave reached the middle Atlantic coast on the 3d, and New England on the 4th.

III.—This high area moved from Manitoba into the upper Mississippi valley on the 6th; on the 7th it was over Lake Superior, and on the 8th reached the Saint Lawrence valley. The temperature fell 31° at Cheyenne on the 5th, and 26° at North Platte, Nebraska. The afternoon report of the 6th showed a fall of from 19° to 32° in Colorado, and from 28° to 30° in Arkansas. On the 7th the cold wave had extended into Texas. The winds in Texas had shifted to northerly on the 6th, and the fall of temperature which occurred was continued by high area iv., moving in from the Pacific coast on the 7th. This area was central on the 8th in Kansas, and during the day moved into the Ohio valley, and reached the Atlantic coast on the 10th. The temperature fell from 15° to 30° in Alabama, Tennessee, and the Ohio valley on the 9th, and from 12° to 19° on the middle and south Atlantic coast on the 10th.

V.—This area advanced from the Pacific coast on the 10th. The barometer had risen during the day .70 inch at Roseburg, Oregon, and Red Bluff, California. The rise in the barometer extended over Montana, Wyoming, and Colorado, accompanied by a fall in temperature of from 12° to 23°. On the 11th the barometer rose .84 inch at Omaha, and the temperature in the upper Mississippi and Missouri valleys fell from 13° to 26°. On the 12th the barometer was highest in the Ohio valley, and the temperature had fallen decidedly from the lake region to the Gulf. The cold wave reached the Atlantic coast on the 13th, the area of highest barometer passing eastward off the middle Atlantic coast on this day.

VI.—On the 13th the barometer rose from .20 to .40 in the Missouri valley; it fell from .10 to .20 in Tennessee, the fall extending eastward to the Atlantic coast. At this report the barometer was highest in Dakota, and the temperature had fallen from 10° to 20° in the Missouri valley. On the 14th a barometric ridge extended from Texas to Manitoba, and the cold wave extended over the lake region and New England. On the 15th low area number viii. having developed in the northwest, the area of highest barometer was transferred to the south Atlantic states, and remained highest on the south and middle Atlantic coast during the 16th and 17th.

VII.—This area extended over Montana on the 16th, moved eastward and was over Lake Superior on the 17th, and reached the New England coast on the 19th. On the 17th the cold wave extended over the lake region, the upper Mississippi valley and the west Gulf states, and over the middle Atlantic states, and New England on the 18th.

VIII.—At the morning report of the 20th, an area of high barometer appeared in northern Minnesota, the rise extending over the Ohio valley and Gulf states, where the temperature had fallen from 7° to 14°. The area of highest barometer reached the Atlantic coast on the 21st, where the temperature fell slightly on the 20th and 21st. The area of highest barometer then moved northeasterly and was over Nova Scotia on the 23d.

IX.—This area moved from the coast of California to Colorado on the 25th; into the west Gulf states on the 26th, thence northeasterly to the lower lake region on the 27th. There was a slight fall of temperature on the Pacific coast on the 25th; in Illinois, Indiana, Missouri, Arkansas and Texas on the 26th; by the morning of the 26th, and during the day, a fall of 10° from the lower lake region south, including the east Gulf states, and a slight fall on the Atlantic coast on the 27th.

X.—On the 28th the barometer was highest in Dakota; it had risen .77 at North Platte, Nebraska, with an increase of pressure extending as far south as Texas. On the 29th the area of highest pressure was over Lake Superior; on the 30th over Lake Ontario, and at midnight of the 31st the highest pressure was over the south Atlantic states. The temperature fell decidedly in the upper Mississippi and Missouri valleys on the 28th, from 12° to 20° in the lake region on the 29th, from 8° to 22° in the Ohio valley and Tennessee on the same day. The cold wave reached the Atlantic coast on the 30th, the temperature falling 20° to 30° in New England and from 10° to 20° in the middle Atlantic states.

#### AREAS OF LOW BAROMETER.

Thirteen atmospheric depressions have been traced over and near the limits of the United States during the month of March. They generally reached the Atlantic coast north of 40° north latitude. The depressions traced from the Pacific coast moved, in general, southeasterly until south of 37° north latitude and then recurved to the northeast.

The following table gives the latitude and longitude in which the several depressions were first and last observed and the average hourly velocity of each depression.

Areas of low barometer.	First observed.		Last observed.		Average velocity in miles per hour.
	Lat. N.	Long. W.	Lat. N.	Long. W.	
No. I.....	51 00	100 00	47 30	58 00	38.8
II.....	50 30	100 30	41 00	79 30	31.2
III.....	38 00	106 30	45 00	63 30	26.7
IV.....	26 30	98 00	40 00	112 30	40.6
V.....	45 00	120 30	49 30	66 00	34.4
VI.....	42 00	120 30	45 00	60 00	35.6
VII.....	27 30	89 30	42 30	63 00	32.8
VIII.....	37 00	124 00	40 30	58 00	31.1
IX.....	44 30	99 30	40 30	58 00	36.6
X.....	44 30	127 00	50 00	62 00	29.3
XI.....	50 00	72 00	49 00	59 30	34.4
XII.....	47 00	128 00	47 00	60 00	28.3
XIII.....	37 30	105 00	37 00	74 00	32.1
XIV.....	44 30	125 00			
Mean hourly velocity.....					33.3

I.—This low area is a continuation of number xv. described in the February REVIEW. On the morning of March 1st it was central near Keokuk, Iowa. During the day general rains occurred in Tennessee and the Ohio valley, snow in the lake region, and high winds on lakes Michigan and Erie. On the morning of the 2d the storm was central near Cape Henry, Virginia, with high southwest winds on the south Atlantic coast, and high northeast winds and snow on the middle Atlantic coast. During the 2d the storm moved rapidly to the northeast, the centre passing over Nova Scotia on the afternoon of the 3d. The following maximum velocities were reported during the passage of this storm: Sandy Hook, New Jersey, 46; Barnegat City, New Jersey, 32; Delaware Breakwater, Delaware, 34; Milwaukee, Wisconsin, 33; Toledo, Ohio, 27; Cape Henry, Virginia, 25; Fort Macon, North Carolina, 30.

II.—This area of low barometer appeared on the afternoon of the 1st in Manitoba; its course was to the south and east, reaching the Atlantic coast on the afternoon of the 3d. High winds accompanied by snow prevailed over the lake region during the 2d and 3d, and rain in Tennessee and the Ohio valley during the 2d.

III.—This area was first located as a storm-centre in Colorado on the afternoon of the 4th. At the afternoon report of this date, generally fair weather prevailed in all districts east of the Mississippi river. The winds in the upper Mississippi and Missouri valleys had shifted to the south and east with increasing cloudiness during the day, and light snow had fallen in Dakota. The storm moved southeasterly and at midnight of the 5th was central in southern Arkansas. The barometer had fallen from .10 to .50 in all districts east of the Mississippi, and rain had occurred in Tennessee and the Ohio valley, the south Atlantic and east Gulf states, and high northeast to southeast winds and snow on the middle Atlantic and New England coasts. On the morning of the 7th the storm was central in southeastern Texas. Its general course from this time was to the northeast, passing over the Virginia coast near Cape Henry on the afternoon of the 9th. Snow fell in New England on the 8th and 9th, with high northeast winds on the coast. Cloudy and threatening weather prevailed in the lake region on the 6th, and general snows on the 7th and 8th, clearing in upper lakes on the 9th, and in the lower lakes by the morning of the 10th. General rains occurred in all districts south of the fortieth parallel during the passage of this storm. Clearing weather prevailed in the south Atlantic and Gulf states on the 9th and in the middle Atlantic states by the morning of the 10th. The following maximum wind velocities were reported: Indianola, Texas, 33 miles; Pensacola, Florida, 26; Smithville, North Carolina, 41; Fort Macon, North Carolina, 29; Sandy Hook, New Jersey, 36; Barnegat City, New Jersey, 32; Eastport, Maine, 34.

IV.—This depression reached the Oregon coast, near the mouth of the Columbia river, on the night of the 5th; it moved south and then east and disappeared in Utah on the morning of the 7th. General rains occurred on the Pacific coast, but the depression after passing into the interior did not cause any marked change in the meteorological conditions.

V.—Appeared on the coast of Oregon on the morning of the 9th. Its path is traced on chart i. until it disappeared in the Saint Lawrence valley on the night of the 12th. General rains occurred on the Pacific coast on the 8th, 9th, and 10th. On the morning of the 11th the area of precipitation covered the upper Mississippi and Missouri valleys, the lake region, and Tennessee and the Ohio valley, with high winds on the lakes and cloudy and threatening weather on the Atlantic coast. Rain fell in New England and the middle Atlantic states on the 12th with high winds on the coast, the weather clearing during the day in the lake region and by the morning of the 13th in New England. Wind velocities reported during passage of number v.: Milwaukee, Wisconsin, 36 miles; Duluth, Minnesota, 40; Mackinaw City, Michigan, 28; Grand Haven, Michigan, 44; Buffalo, New York, 60; Rochester, New York, 48.

VI.—A slight depression moved southeasterly from the Pacific coast to the Gulf of Mexico during the 12th. From midnight of the 12th to the morning of the 13th the barometer fell .10 in Louisiana, and the depression was central in the Gulf south of Louisiana. The winds on the coast of Texas shifted to northeast during the night of the 11th as the barometer rose after the passage of area number v.; depression number vi. was so slight while to the west of Texas that it had no effect on the direction of these winds. After passing into the Gulf it greatly increased in energy and moved rapidly northeastward. Rain fell in the east Gulf states on the 11th, 12th, and 13th; in the south Atlantic on the 12th, 13th, and 14th; in the middle Atlantic the weather cleared during the afternoon and night of the 12th after low area v. had passed. The rain accompanying number vi. began on the 13th and continued during the 14th, clearing on the morning of the 15th. Rain and snow fell in New England on the 15th. The following wind velocities were reported during the passage of this storm: Fort Macon, North Carolina, 35 miles; Cape Henry, Virginia, 35; Kitty Hawk, North Carolina, 32; Sandy Hook, New Jersey, 29; Atlantic City, New Jersey, 32; Barnegat City, New Jersey, 42; Provincetown, Massachusetts, 27; Eastport, Maine, 27.

VII.—Appeared on the California coast near San Francisco during the night of the 14th; it moved southeasterly and on the morning of the 16th was central in New Mexico, south of Santa Fé; after a slight movement to the northeast it moved southeasterly, and on the morning of the 18th was central southeast of Indianola. Its general direction from this time was northeast, causing general and heavy rains in the Gulf, south and middle Atlantic states, in the lake region, and New England, and high winds on the lakes, and the New England and middle Atlantic coasts.

VIII.—This area was first located in Dakota on the night of the 15th; its general course was northeasterly and then easterly until it disappeared over Nova Scotia on the morning of the 18th. Light rains, and snow in the northern portions, occurred in the lake region and New England. It did not materially effect the meteorological conditions south of 40° north latitude.

IX.—This area appeared on the afternoon of the 18th near the coast of Oregon. At midnight it was central in Washington Territory. Here it divided into two parts, one moving to the northeast, but the greater depression was central the next morning in northwestern Utah. It then moved southeasterly into Texas, and then after a slight movement to the northwest, moved off to the northeast, and reached the Saint Lawrence valley on the afternoon of the 24th. It caused general rains in all districts east of the Mississippi and high winds over the lake region and on the New England and middle Atlantic coasts.

X.—This area passed from the night of the 21st to the afternoon of the 22d across the northern part of the Canadian maritime provinces. It had no effect on the meteorological condition within the limits of the United States.

XI.—This depression was first located on the Oregon coast on the morning of the 22d; on the morning of the 23d central in Utah; 24th, in Texas; 25th, in Missouri; 26th, Michigan; 27th, off the New England coast, and disappeared over Nova Scotia on the morning of the 29th. By the morning of the 24th the rain area extended over the Gulf, south, and middle Atlantic states; on the morning of the 26th the rain area included all districts east of the Mississippi, clearing in all districts on the 27th.

XII.—This area first appeared in Colorado at midnight of the 26th; its course was easterly, disappearing off the Virginia coast on the morning of the 29th. Rain fell in the upper Mississippi and Missouri valleys on the 28th and clearing on the 29th. Light rain also fell in the lake region on the 28th and in the middle Atlantic states on the 29th, but by midnight of this date the weather was clear in all districts east of the Mississippi river.

XIII.—Appeared off the coast of Oregon on the 27th. On the morning of the 29th it was central in southwestern Utah. On the morning of the 30th in Texas, and at midnight of the 31st in northern Kansas; at this report rain was falling in the upper Mississippi and Missouri valleys, with cloudy and threatening weather in the lake region.

#### NORTH ATLANTIC STORMS DURING MARCH, 1884.

[Pressure expressed in inches and in millimetres; wind-force by scale of 0—10.

Chart ii. exhibits the paths of the principal atmospheric depressions that have appeared over the north Atlantic ocean during March, 1884. The location of the various storm-centres has been approximately determined from reports of observations furnished by agents and captains of ocean steamships and sailing vessels, and from other miscellaneous data received at this office up to April 22, 1884.

The observations used are in general simultaneous, being taken each day at 7 a. m. Washington, or 12h. 8m. p. m. Greenwich, mean time.

Of the nine depressions charted, seven are apparently continuations of storms which passed into the Atlantic from the North American continent; two depressions, numbers iii. and ix., developed over the ocean, the former appearing on the 7th, between W. 40° and 45°, and the latter off the southwest of Ireland at the close of the month. The depressions have moved in a northeasterly direction, four of them reaching the British coast north of the fifty-fifth parallel. From the 1st to the 25th, fresh to strong southwesterly to northwesterly gales with rain or snow prevailed over the north Atlantic; toward the close of the month the weather moderated. Much fog was reported near the Banks. During the first and second decades of the month the atmospheric pressure remained generally low over the region north of 45° north latitude and especially so in the vicinity of the western coast of the British Isles.

The following are brief descriptions of the depressions charted:

I.—This was probably a continuation of an important depression which occupied the Gulf of Saint Lawrence at the close of February, (low area xiv., chart i. for February.) When last observed, on February 29th, the pressure at the centre of disturbance was 28.4 (721.3); moving rapidly north-eastward it passed over Newfoundland on March 1st, and by the 2d, the region of least pressure was near N. 55°, W. 30°, the lowest reported barometer reading 29.43 (747.5.) Strong westerly gales occurred over the region between N. 45° and 50°, during the 2d, with fresh to strong southerly breezes to the eastward of W. 30°. The s. s. "Clintonia," in about N. 48°, W. 40°, on the 1st, had a heavy ssw. gale, increasing to a hurricane and moderating at midnight to a heavy nw. gale. On the 3d, the disturbance was off the northwest coast of Ireland; the winds between W. 20° and 10° and south of N. 50° having changed to the westward.

II.—Was a continuation of the disturbance charted as low area i., chart i., of this REVIEW. During the 2d it moved northeastward along the coast of the United States, and on the 3d it was central east of Nova Scotia, the pressure at the centre being below 29.0 (736.6). The disturbance moved slowly eastward, and during the afternoon of the 4th the high southerly winds, which had prevailed over the region between W. 55° and 45°, shifted to westerly and blew with the force of a strong gale. Captain Moodie, commanding the s. s. "State of Georgia," in about N. 41° 47', W. 55° 21', reported; "at 0 h. 30 m. p. m., Greenwich time, after a short calm the wind came from w. by s. with hurricane force, and continued with unabating force for one and a half hours, after which it veered to nw. and nnw. and began to moderate, lowest barometer (aneroid) 29.26 (743.2). It was almost impossible to do anything about the decks, and so black was the atmosphere that nothing could be seen beyond half a mile from the ship." Captain Stokes, commanding the s. s. "Belgenland," in N. 39° 49', W. 55° 26', reported a very heavy gale on the 4th, with hail and rain squalls and lightning, wind veering gradually from w. to nw. The steamers "Weser," H. Bruns commanding, in

N. 42° 07', W. 53° 42', and "Venetian," W. H. Trant commanding, in N. 41° 56', W. 48° 22', reported, on the 4th, first, moderate southerly winds, with heavy rain and lightning, then shifting during the afternoon to strong westerly gales, with high sea. During the day the disturbance continued its north-easterly movement, and on the 5th it was apparently central near N. 51°, W. 32°. Captain Cochrane, commanding the s. s. "The Queen," in about N. 46° 26', W. 39° 58', on the 4th, reported: "at 10 a. m., of the 4th wind backed to southward and increased to a fresh gale; at 10 p. m., blowing a furious gale, with fierce squalls, thunder and lightning and very heavy rain, barometer 29.28 (743.7); the wind then shifted to nw. and settled into a strong gale, which continued until midnight of the 5th; the barometer began to rise rapidly at noon of the 5th." On the 6th the storm-centre was near the fifty-fifth parallel and between W. 20° and 15°, the pressure having increased to 29.8 (756.9). This depression was followed by a rapid increase of pressure, which caused steep gradients over the region south of N. 50° and west of W. 25°, where heavy westerly and northwesterly gales prevailed. During the 7th the disturbance passed northeastward over the British Isles.

III.—On the 6th the atmospheric pressure over the ocean, between N. 40° and 50°, and W. 40° and 50°, ranged from 30.4 (772.1) to 30.6 (777.2); during the day a rapid decrease of pressure appears to have occurred, since, by the 7th, the barometric readings over the above-mentioned region ranged from 29.8 (756.9) to 30.2 (767.1), and the winds, which had backed to sw., blew with the force of a heavy gale. Captain De Jousse, commanding the s. s. "Saint Laurent," in about N. 46° 40', W. 39° 55', on the 7th reported: "at 2.28 a. m. the barometer, which read 30.16 (766.1), began to fall rapidly, and four hours later it read 29.82 (757.4); the wind shifted from nw. to sw., and from 6.30 a. m. to 11.30 a. m. it blew with hurricane force; at 3 p. m. it shifted to nw. and decreased, the barometer rising rapidly." The ship "Armenia," E. L. Carter commanding, in N. 44° 35', W. 44° 30', had barometer 29.81 (757.1), (a fall of .42 inch since the observation of the 6th) wind w., force 7, overcast. Captain Jäger, commanding the s. s. "Nürnberg," in N. 45° 35', W. 40° 28', reported barometer 29.89 (759.2), being a decrease of about .25 inch, wind sw., force 8, hail-squalls, and very heavy sea. By the morning of the 8th the storm-centre was near W. 20°, and to the north of the fifty-fifth parallel, the lowest pressure reported being 29.6 (751.8). Strong westerly to northwesterly gales, with rain, snow and sleet, prevailed near N. 50°, and between W. 30° and 15°; east of W. 15° the winds were southerly. By the 9th the disturbance was near the British coasts, attended by moderate gales and decreasing pressure. From the 9th to the 17th the pressure remained low near the western coasts of the British Isles, causing southerly winds and rainy weather over those islands.

IV.—This was a continuation of low area iii., of chart i. It passed into the Atlantic from the coast of Virginia during the 9th, and moved northeastward to Nova Scotia on the 10th, and by the 11th it was central on the Banks of Newfoundland. At the same time a large and deep depression occupied the ocean north of N. 50°, and east of W. 35°, and the two depressions, apparently combining, formed an extensive area of low pressures which extended from the Banks eastward to the British coasts; to the westward of W. 55°, a steep barometric gradient existed, so that moderate to heavy northwesterly gales prevailed in that region. The following reports indicate the presence of this depression:

Captain Le Gallais, commanding the s. s. "Grecian," between N. 44° 27', W. 44° 12', and N. 46° 11', W. 39° 40', reported: "11th, barometer falling slowly and westerly wind increasing until 5 a. m. of the 12th, when the barometer read 28.88 (733.5), wind shifted to nw., blowing a hurricane with very high sea; at 7 a. m. the barometer began to rise, but the gale did not moderate until 4 a. m. of the 13th, when the wind hauled to n."

Captain P. d'Hauterive commanding the s. s. "France," re-